



ARCS

Remedial Planning Activities
At Selected Uncontrolled
Hazardous Substance Disposal Sites
In The Zone of Regions VI, VII and VIII



Environmental Protection Agency

Contract No. 68-W9-0053

**YANKTON LIGHTING and HEATING COMPANY #1
YANKTON, SOUTH DAKOTA**

PRELIMINARY ASSESSMENT

Work Assignment No. 18-8JZZ

DECEMBER 16, 1994

URS

CONSULTANTS, INC.

Brown and Caldwell
Harza Environmental Services, Inc.
Shannon & Wilson, Inc.
Western Research Institute

PRELIMINARY ASSESSMENT

Yankton Lighting and Heating Company #1 Site
Yankton, South Dakota

EPA ID #SDD987674595

U.S. EPA Contract No. 68-W9-0053
Work Assignment No. 18-8JZZ

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Yankton #1/Town Gas Site/PA
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PRELIMINARY ASSESSMENT

Yankton Lighting and Heating Company #1 Town Gas Site Yankton, South Dakota

CERCLIS ID# SDD987674595

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1.0 INTRODUCTION

This Preliminary Assessment (PA) of the Yankton Lighting and Heating Company #1 town gas site (CERCLIS ID# SDD987674595) in Yankton, South Dakota, has been prepared to satisfy the requirements of Work Assignment (WA) No. 18-8JZZ issued to URS Consultants, Inc. (URS) by the Region VIII office of the U.S. Environmental Protection Agency (EPA).

On May 28, 1993, URS personnel conducted a site reconnaissance at the Yankton Lighting and Heating Company #1 (Yankton) site. This PA is the result of observations made during that visit, review of Sanborn Fire Insurance Maps, personal correspondence with local historical societies, information gathered from EPA files and other sources.

2.0 OBJECTIVES

The objectives of this PA report are to:

- Characterize potential wastes sources;
- Assess potential contaminant characteristics and quantity;
- Assess potential routes for contaminant migration;
- Identify local receptor targets potentially at risk from contaminant migration; and
- Determine the potential impacts to public health and the environment.

3.0 SITE DESCRIPTION

3.1 SITE LOCATION

The Yankton site is located on approximately one-half acre in the northwest quarter of Section 18, T. 93 N., R. 55 W. of the Yankton, South Dakota Quadrangle (U.S. Geological Survey (USGS) 1968). The site is located on the southeast corner of the intersection of Seventh Street and Douglas Street in Yankton, South Dakota (Figure 1) (Yankton County Historical Society 1993). The street address is 618 Douglas Street (URS

Consultants, Inc. (URS) 1993). The site coordinates are 42° 52' 30" N. latitude and 97° 23' 00" W. longitude (USGS 1978).

3.2 SITE HISTORY

From 1889 until approximately 1950, gas was commonly manufactured by heating coal or coke. Gas produced by this process was stored in large metal tanks called gasometers and distributed to homes and industry through steel pipe (Radian Corporation (Radian) 1985). The Yankton Lighting and Heating Company's first plant (Yankton #1) was located on the southeast corner of the intersection of Seventh Street and Douglas Street in Yankton, South Dakota (CERCLIS ID# SDD987674595). Yankton #1 operated from approximately 1900 until 1908 when it was forced to move due to "foul and obnoxious odors" in the surrounding residential area (Yankton County Historical Society 1993). From approximately 1908 until 1938, the Yankton Lighting and Heating Company operated a water gas plant at the northeast corner of the intersection of First Street and Walnut Street (CERCLIS ID# SDD987674603). Gas production at Yankton ended in approximately 1938 when natural gas use became more prevalent (Radian Corporation 1985). Two residents live at the location of the former gas plant in a home that was apparently constructed after the gas plant closed in 1908 (City of Yankton 1994).

3.3 SITE CHARACTERISTICS

3.3.1 Physical Geography

The Yankton site is located on property adjacent to and south of Marne Creek (figures 1 and 2). The surrounding area is residential with relatively flat topography. The site is located approximately 1,200 feet above mean sea level (USGS 1968).

3.3.2 Geology

The Yankton site is located on Quaternary Age terrace alluvial deposits from the Missouri River. The alluvial deposits are composed of silt, clay and sand. The thickness of these deposits is approximately 20 feet. The alluvium rests upon approximately 100 feet of glacial outwash deposits. These outwash deposits are the result of deposition from braided streams and primarily consist of interbedded coarse sands and gravels (USGS 1986).

Underlying the glacial outwash and till are approximately 800 to 1,100 feet of Cretaceous Age sediments. These include the Carlile Shale, Niobrara Formation, Greenhorn Limestone, Graneros Shale, and Dakota Sandstone. Available information suggests that the Niobrara Formation, which consists of soft, calcareous shale, may be absent in the eastern portion of Yankton due to removal by glaciation and erosion (USGS 1986). The Dakota Sandstone unconformably overlies the Precambrian Age Sioux quartzite. No faults appear to be present within four miles of the site (USGS 1960).

3.3.3 Hydrogeology

The Yankton site is located on silt and sand alluvial deposits which form an alluvial aquifer. The lateral extent of the alluvial aquifer and whether the alluvial aquifer yields water in sufficient quantities for domestic or livestock purposes are not known. The alluvium along the Missouri River may be hydraulically connected with the underlying Lower James-Missouri Aquifer (USGS 1986). The aquifer is approximately 100 feet thick and is composed of sand and gravel glacial outwash. The hydraulic gradient is from northwest to southeast. Recharge to the aquifer is from infiltration of precipitation and seepage from streams. The transmissivity of the aquifer has been determined to be from 20,700 to 24,700 square feet per day (ft²/day) (USGS 1986). The Lower James-Missouri Aquifer pinches out within four miles to the west of Yankton. Water

from the Lower James-Missouri Aquifer is used primarily for domestic and agricultural purposes (USGS 1986).

In the vicinity of the site, the Lower James-Missouri Aquifer may be underlain by the bedrock Niobrara Aquifer. Existing information suggests that the Niobrara Aquifer may be absent in the eastern part of Yankton where the Niobrara Formation has been removed by glaciation and erosion; however, within one mile to the northwest of the site the aquifer is present (USGS 1986). The Niobrara Aquifer is under water-table conditions and may be in hydraulic connection with the overlying James-Missouri Aquifer within one mile northwest of the site. Four miles west of the site the Niobrara Aquifer thickens to approximately 150 to 200 feet. Groundwater flow is from northwest to southeast. Water in the Niobrara Aquifer is satisfactory for domestic and livestock purposes; however, it is not extensively used (USGS 1986).

The Dakota Aquifer is separated from the overlying Niobrara Aquifer, or the Lower James-Missouri Aquifer where the Niobrara is absent, by approximately 350 to 500 feet of low permeability Cretaceous Age shale and limestone. The Dakota Aquifer is composed of interbedded siltstone, shale, and sandstone and is between 280 and 450 feet thick (USGS 1986). The hydraulic gradient is approximately 4.5 feet per mile (ft/mi) and groundwater flow is to the northeast. Recharge to the aquifer is from underlying formations in western South Dakota which outcrop in the Black Hills (USGS 1986). The Dakota Aquifer is a major source of domestic, stock, and municipal water (USGS 1986).

3.3.4 Hydrology

The Yankton site is located adjacent to and east of Marne Creek. Runoff from precipitation at the site may infiltrate to shallow groundwater through permeable soils or enter Marne Creek via overland flow. Marne Creek discharges into the Missouri River approximately one mile downstream of the site (Figure 2) (USGS 1968). The flow rate of Marne Creek is unknown. The Missouri River flows to

the east at a rate of greater than 10,000 cubic feet per second (cfs) (USGS 1985; USGS 1991).

3.3.5 Climate

The Yankton site is located in a semiarid climate zone. The mean annual precipitation is 27.28 inches. The net annual precipitation as calculated from precipitation and evapotranspiration data (Hazard Ranking System (HRS) definition) is 5.04 inches (Office of the Federal Register 1990) (University of Delaware 1986). The 2-year, 24-hour rainfall event for this area is 2.5 inches (Dunne and Leopold 1978).

4.0 PRELIMINARY PATHWAY ANALYSIS

4.1 SOURCE CHARACTERIZATION

Several chemical waste products were generated during the coal gasification process. By-products of coal gasification include coal tar, ammonia, cyanide, lead, coke, naphthalene, and spent lime (Radian 1985).

Coal gas manufacturers were generally able to sell approximately 50 percent of their waste or by-products for reuse in industry. Coal tar was often used to make creosote. The remaining material was commonly disposed of in the vicinity of the gasification plants. Typically, low lying areas or lagoons were utilized to collect waste (Air and Waste Management Association 1993). In some cases, coal tar and ammonia may have drained directly from the plant condenser into wells beneath the plant (Bowditch 1867). A majority of the disposed waste was coal tar which generally consisted of polycyclic aromatic hydrocarbons (PAHs), volatile organic hydrocarbons and phenols (Pollution Engineering 1992). Specifically, the most predominant constituents of coal tar are benzene, toluene, naphthalene, anthracene, xylene, phenol, ammonia and pyridine (Hazardous Substance Data Base (HSDB) 1994). The exact constituents vary based on the type of coal used and the manufacturing process. Coal tar deposits can exist in four

fractions solid/semi solid, light non-aqueous phase liquid (LNAPL), dense non-aqueous phase liquid (DNAPL) and a water soluble fraction (Pollution Engineering 1992).

It is unknown whether byproducts of gas production were deposited at the Yankton site. No visible evidence of the former gasification plant remains at the site (URS 1993) (photos 1 and 2). The current residents of the property have not observed any signs of the former coal gasification plant (Voracek 1994).

4.2 AIR PATHWAY

No contamination was observed at the surface during the URS site visit (URS 1993). VOCs could potentially be released if buried waste is disturbed or is able to seep to the surface at a low lying area. The nearest resident lives on site. The 11,762 residents of Yankton live within two miles of the site (U.S. Department of Commerce, Bureau of Census 1990). Over 40 acres of riverine and palustrine wetlands are located within four miles of the site (U.S. Department of the Interior 1989). Contamination, if present, is covered by a house, soil and/or vegetation (URS 1993).

4.3 GROUNDWATER PATHWAY

Groundwater usage in Yankton is minimal because most residents are served by the municipal water system (City of Yankton, Yankton Water Department 1993). The shallow alluvial aquifer underlying the site is hydrologically connected to the Missouri River. Well logs from wells completed in the vicinity of the site indicate that groundwater is present at approximately 15 feet below ground surface. No active domestic wells have been identified within one mile of the site. Scattered domestic, commercial, industrial and monitoring wells completed to various aquifers are reported within a four-mile radius of the site. Many of the listed wells have been closed or abandoned (South Dakota Department of Environment and Natural Resources 1993).

4.4 SURFACE WATER PATHWAY

Source areas, if present, are covered by soil and vegetation (URS 1993). The site is located within the 100-year flood plain for Marne Creek (U.S. Department of Human Development 1980). Potential underground contamination could seep into Marne Creek. Runoff from precipitation at the site will enter Marne Creek via overland flow. The city of Yankton municipal water intake is located on the Missouri River upgradient of Marne Creek. Over 10,000 residents of Yankton are served by this water system (City of Yankton, Yankton Water Department 1993). The flow rate of the Missouri River at Yankton is greater than 10,000 cfs (USGS 1991). Intermittent riverine and palustrine wetlands are present along Marne Creek within one mile downstream of the site. The Missouri River is a recreational fishery lined by more than 20 miles of intermittent riverine and palustrine wetlands (U.S. Department of the Interior 1989). The federally-listed endangered Pallid Sturgeon is indigenous to the Missouri River within the 15-mile downstream segment (South Dakota Department of Game, Fish and Parks 1993). Sensitive environments also include habitats for the federally-listed endangered Least Tern and the federally-listed threatened Piping Plover (South Dakota Department of Game, Fish and Parks 1993).

4.5 SOIL EXPOSURE PATHWAY

Access to the site, currently a residential property, is unrestricted; however, no contamination was observed at the surface during the URS site visit. Stressed vegetation was not observed at the site. Contamination, if present, is covered by a house, soil and/or vegetation (URS 1993). Approximately 6,000 residents of Yankton live within one mile of the site (U.S. Department of Commerce, Bureau of Census 1990). Terrestrial sensitive environments include habitats for the federally-listed endangered Least Tern and the federally-listed threatened Piping Plover (South Dakota Department of Game, Fish and Parks 1993).

5.0 SUMMARY

Circumstantial evidence based on industry standards suggests that coal tar and other process wastes may have been deposited in unlined lagoons, pits or wells at or near the Yankton site between approximately 1900 and 1908. It is unknown if waste has actually been deposited at the site. If source areas are present, they are located underground which facilitates migration to the shallow alluvial aquifer. Few groundwater targets have been identified immediately downgradient of the site. Surface water targets associated with Marne Creek and the Missouri River include wetlands, fisheries, recreational areas and habitats for federally-listed endangered species. Source areas, if present, appear to be fairly well contained with respect to the air and soil exposure pathways.

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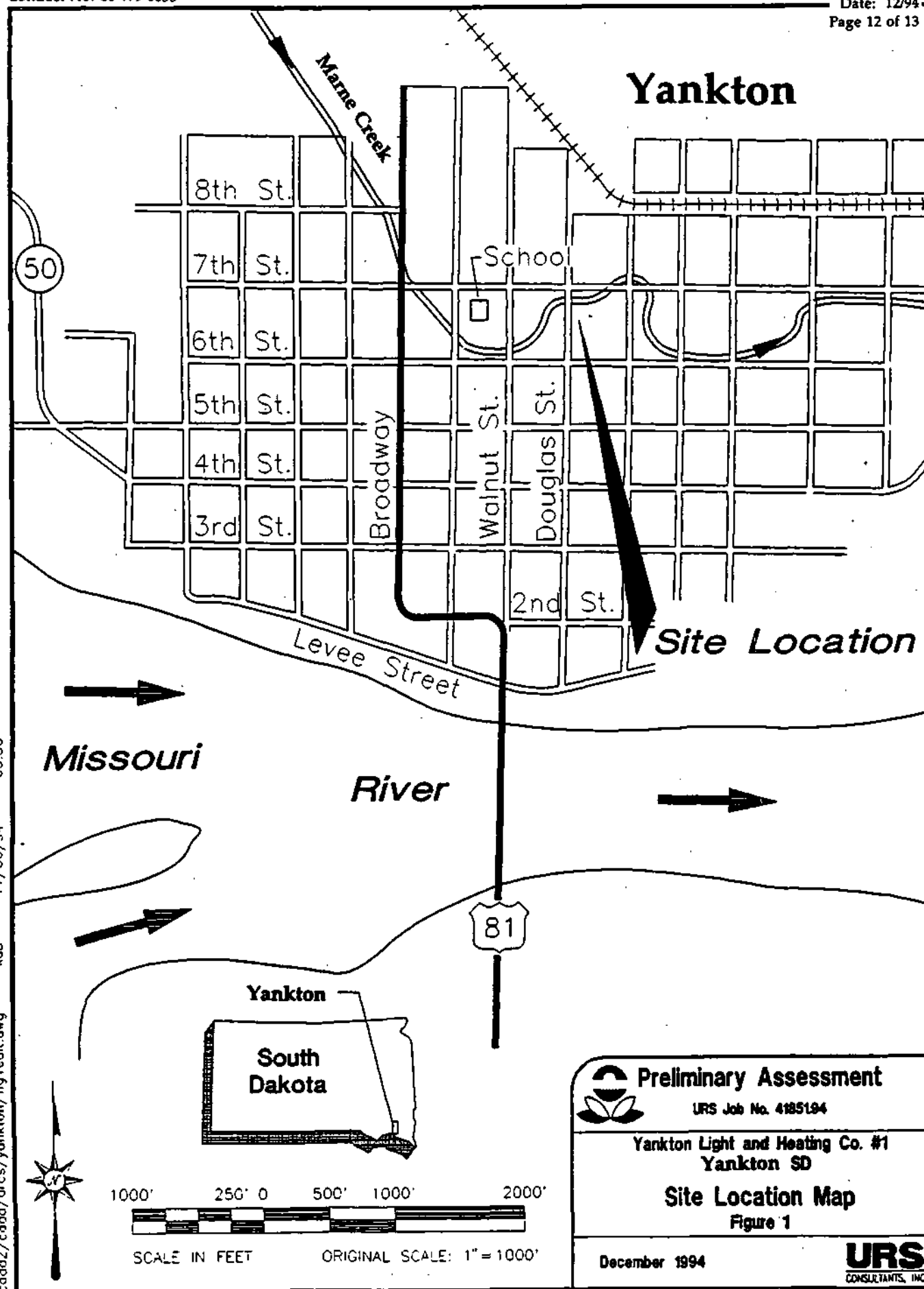
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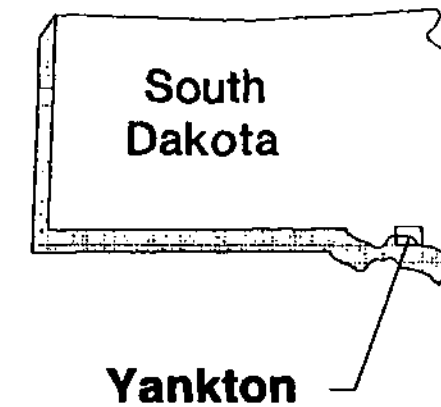
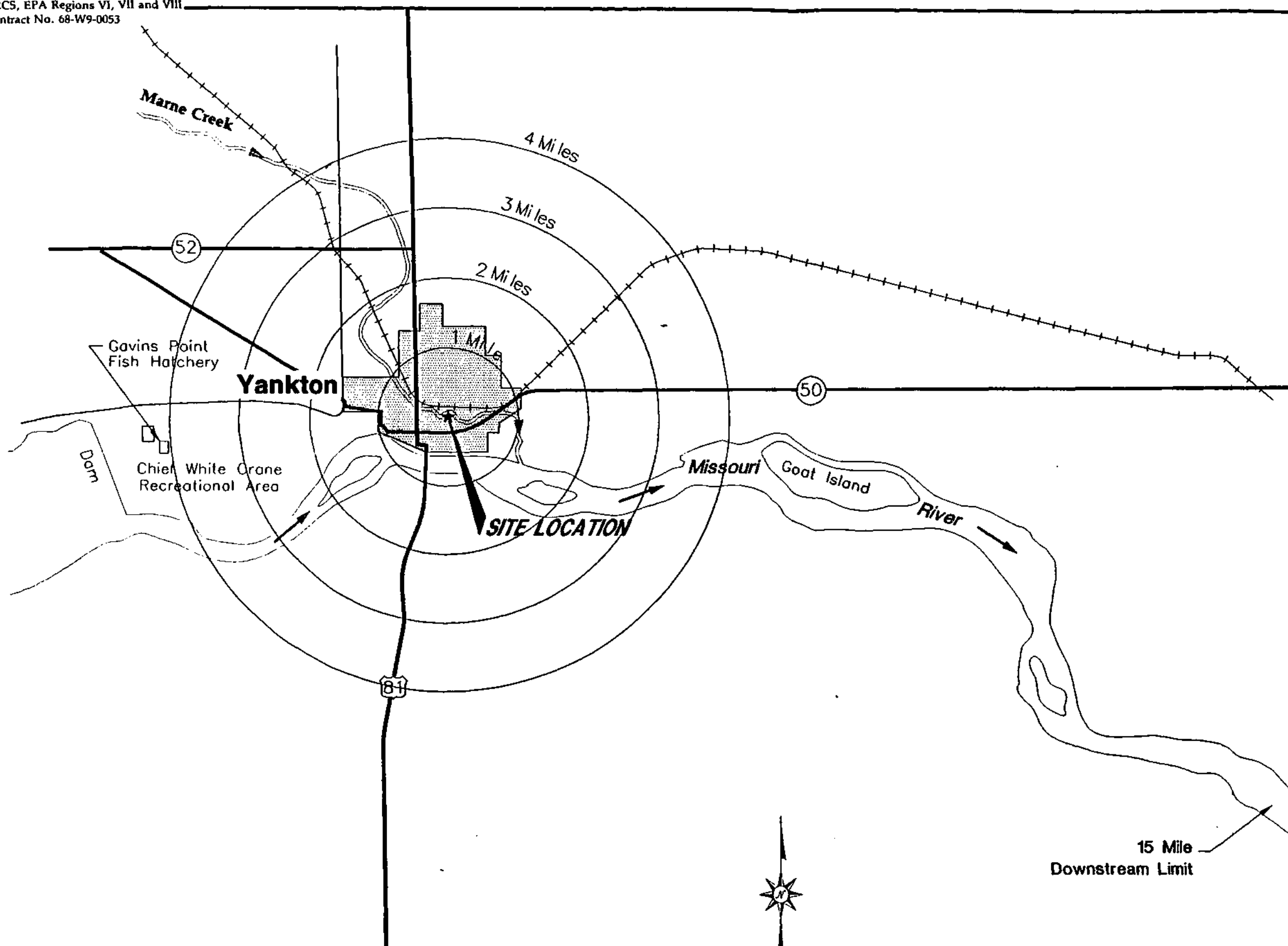
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SOURCE:
USGS 30x60 Minute Topographic Quadrangle:
1:100,000 scale, South Dakota - Nebraska 1985

	Preliminary Assessment
	URS Job No. 4185194
	Yankton Lighting & Heating Co. #1 Yankton SD
	Area of Influence Map Figure 2
December 1994	
	

APPENDIX A
PA Report Form 2050-0095

Potential Hazardous Waste Site Preliminary Assessment Form		<i>Identification</i>	
		State: SD	CERCLIS Number: 0987674595
		CERCLIS Discovery Date: 6/18/93	
1. General Site Information			
Name: Yankton Lighting and Heating #1		Street Address: 618 Douglas	
City: Yankton	State: SD	Zip Code: 57078	County: Yankton Co. Code: 135 Cong. Dist.
Latitude: 42° 52' 30.0"	Longitude: 97° 23' 00.0"	Approximate Area of Site: 1/4 Acres	Status of Site: <input type="checkbox"/> Active <input type="checkbox"/> Not Specified <input checked="" type="checkbox"/> Inactive <input type="checkbox"/> NA (GW plume, etc.)
2. Owner/Operator Information			
Owner: William Voracek		Operator: Yankton Lighting and Heat	
Street Address: 618 Douglas		Street Address: -	
City: Yankton		City: -	
State: SD	Zip Code: 57078	Telephone: ()	State: - Zip Code: - Telephone: ()
Type of Ownership: <input checked="" type="checkbox"/> Private <input type="checkbox"/> County <input type="checkbox"/> Federal Agency <input type="checkbox"/> Municipal <input type="checkbox"/> State <input type="checkbox"/> Not Specified <input type="checkbox"/> Indian <input type="checkbox"/> Other _____		How Initially Identified: <input type="checkbox"/> Citizen Complaint <input checked="" type="checkbox"/> Federal Program <input type="checkbox"/> PA Petition <input type="checkbox"/> Incidental <input type="checkbox"/> State/Local Program <input type="checkbox"/> Not Specified <input type="checkbox"/> RCRA/CERCLA Notification <input type="checkbox"/> Other _____	
3. Site Evaluator Information			
Name of Evaluator: Tim Joseph		Agency/Organization: URS Consultants for EPA	
Date Prepared: 12/94			
Street Address: 1099 18th Street Suite 700		City: Denver	State: CO
Name of EPA or State Agency Contact: Robert Heise		Street Address: 999 18th Street Suite 500	
City: Denver		State: CO	Telephone: (303) 294-7504
4. Site Disposition (for EPA use only)			
Emergency Response/Removal Assessment Recommendation: <input type="checkbox"/> Yes <input type="checkbox"/> No Date: _____		CERCLIS Recommendation: <input type="checkbox"/> Higher Priority SI <input type="checkbox"/> Lower Priority SI <input type="checkbox"/> NFRAP <input type="checkbox"/> RCRA <input type="checkbox"/> Other _____ Date: _____	
Signature: _____		Name (typed): _____	
Position: _____			



Potential Hazardous Waste Site
Preliminary Assessment Form - Page 2 of 4

CERCLIS Number:

SD0987674595

5. General Site Characteristics

Predominant Land Uses Within 1 Mile of Site (check all that apply):

- ☐ Industrial ☐ Agriculture ☐ DOI
☒ Commercial ☐ Mining ☐ Other Federal Facility
☒ Residential ☐ DOD
☐ Forest/Fields ☐ DOE ☐ Other _____

Site Setting:

- ☒ Urban
☐ Suburban
☐ Rural

Years of Operation: LATE
Beginning Year 1890s
Ending Year 1908
☐ Unknown

Type of Site Operations (check all that apply):

☒ Manufacturing (must check subcategory)

- ☐ Lumber and Wood Products
☐ Inorganic Chemicals
☐ Plastic and/or Rubber Products
☐ Paints, Varnishes
☐ Industrial Organic Chemicals
☐ Agricultural Chemicals
(e.g., pesticides, fertilizers)
☐ Miscellaneous Chemical Products
(e.g., adhesives, explosives, ink)
☐ Primary Metals
☐ Metal Coating, Plating, Engraving
☐ Metal Forging, Stamping
☐ Fabricated Structural Metal Products
☐ Electronic Equipment
☒ Other Manufacturing Coal Gas
☐ Mining
☐ Metals
☐ Coal
☐ Oil and Gas
☐ Non-metallic Minerals

- ☐ Retail
☐ Recycling
☐ Junk/Salvage Yard
☐ Municipal Landfill
☐ Other Landfill
☐ DOD
☐ DOE
☐ DOI
☐ Other Federal Facility _____
☐ RCRA
☐ Treatment, Storage, or Disposal
☐ Large Quantity Generator
☐ Small Quantity Generator
☐ Subtitle D
☐ Municipal
☐ Industrial
☐ "Converter"
☐ "Protective Filer"
☐ "Non- or Late Filer"
☐ Not Specified
☐ Other _____

Waste Generated:

- ☒ Onsite
☐ Offsite
☐ Onsite and Offsite

Waste Deposition Authorized By:

- ☐ Present Owner
☐ Former Owner
☐ Present & Former Owner
☐ Unauthorized
☒ Unknown

Waste Accessible to the Public:

- ☐ Yes
☒ No

Distance to Nearest Dwelling,
School, or Workplace:

0 Feet

6. Waste Characteristics Information

Source Type:
(check all that apply)

Source Waste Quantity:
(include units)

Tier *

General Types of Waste (check all that apply)

- ☐ Landfill
☒ Surface Impoundment buried - Potential
☐ Drums
☐ Tanks and Non-Drum Containers
☐ Chemical Waste Pile
☐ Scrap Metal or Junk Pile
☐ Tailings Pile
☐ Trash Pile (open dump)
☐ Land Treatment
☐ Contaminated Ground Water Plume
(unidentified source)
☐ Contaminated Surface Water/Sediment
(unidentified source)
☐ Contaminated Soil
☐ Other _____
☐ No Sources

- ☒ Metals
☒ Organics
☒ Inorganics
☐ Solvents
☐ Paints/Pigments
☐ Laboratory/Hospital Waste
☐ Radioactive Waste
☐ Construction/Demolition Waste
☐ Pesticides/Herbicides
☐ Acids/Bases
☒ Oily Waste
☐ Municipal Waste
☐ Mining Waste
☐ Explosives
☐ Other _____

Physical State of Waste as Deposited (check all that apply): Potential

- ☐ Solid ☒ Sludge ☐ Powder
☐ Liquid ☐ Gas

* C = Constituent, W = Wastestream, V = Volume, A = Area

APPENDIX B
EPA PA Worksheet

PA WORKSHEET

Site Name Yankton Lighting and Heating Co. #1 City, State Yankton, South Dakota

CERCLIS ID # SDD987674595

Reported by Tim Joseph - URS Consultants, Inc. Date December 1994

HIGHLIGHTS:

A) IS THERE QUALITATIVE OR QUANTITATIVE EVIDENCE OF A RELEASE TO AIR, SURFACE WATER, GROUND WATER, OR SURFACE SOIL? DESCRIBE BRIEFLY.

More detail in items GW-1 (for groundwater pathway), SW-5 (for surface water pathway), A-1 (for air pathway), and SE-1 (for soil exposure pathway).

No.

B) IS THERE EVIDENCE OF AN IMPACTED TARGET POPULATION? No. DESCRIBE.

Pathway	Target	none/target size	Brief description	More discussion in
Groundwater	public drinking water supply	0	N/A	N/A
	domestic drinking water supply	0	N/A	N/A
Surface Water	drinking water	0	N/A	N/A
	fishery	0	N/A	N/A
	sens. env.	0	N/A	N/A
Soil Exposure	people w/in 200'	0	N/A	N/A
	terrestrial sens. env.	0	N/A	N/A
Air	population	0	N/A	N/A

SITE INFORMATION

G-1. Directions to the site (from nearest easily recognized point).

The site is located at the southeast corner of Seventh Street and Douglas Street in Yankton, South Dakota.

G-2. Are there other potential sources in the neighborhood to be aware of as the site is evaluated? eg. Is the site in an industrial area, near a railroad, along a highway? Are sources with similar contaminants to this site in the vicinity?

The railroad runs to the north of the site. Automobile emissions will contribute PAHs to the environment; many roads are located near the site.

Source of information: URS 1993; HSDB 1994

Background/Operating History

G-3. Describe the operating history of the site:

The Yankton plant was a manufactured gas facility that operated from the late 1890s until 1908.

Source of information: Yankton County Historical Society 1993

G-4. Describe site and nature of operations (property size, manufacturing, waste disposal, storage, etc.):

Unknown.

Source of information: EPA file search

G-5. Describe any emergency or remedial actions that have occurred at the site:

None identified.

Source of information: EPA file search

G-6. Are there records or knowledge of accidents or spills involving site wastes? Are there Emergency Response Notification (ERNs) reports for this location?

None identified.

Source of information: EPA file search

G-7. Describe existing sampling data and briefly summarize data quality (e.g. sample objective, age/comparability, analytical methods, detection limits, QA/QC, validatability):

None available.

Source of information: File search

G-8. Is there any other local, state or federal regulatory involvement? Describe. Include permits, and names of contact individuals within each government organization. None identified.

AGENCY	PROGRAM	CONTACT	PHONE	PERMIT
None Identified	N/A	N/A	N/A	N/A

G-9. Attach site sketch or schematic. Include all pertinent features including wells, storage areas, underground storage tanks, source areas, buildings, access roads, areas of ponded water. Refer to figure(s) submitted with text of report if appropriate.

Refer to Figure 1, PA text.

SOURCE CHARACTERIZATION

WC-1. Describe each source at the site, on Table 1, in terms of source type, containment, size/area/volume/quantity, and substances present. See HRS Tables 2-5 and 5-2 for source descriptions, Tables 3-2, 4-2, 4-8, 5-6, 6-3, and 6-9 for containment.

WC-2. Briefly describe how waste quantity was estimated (eg. historical records or manifests, permit applications, air photo measurements, etc.):

Waste quantity cannot be estimated with current information.

Source of information: File search

WC-3. Describe any restrictions or barriers to accessibility of on-site sources.

Waste, if present, is buried. No contamination was observed at the surface.

Source of information: URS 1993

GROUND WATER CHARACTERISTICS

GW-1. Any positive or circumstantial evidence of a release to groundwater? Describe.

No; however, if waste was deposited at the site, a release to groundwater is probable.

Source of information: URS 1993

GW-2. Any positive or circumstantial evidence of a release to drinking water users? Describe analytes, detection limits, background, hits, number of users, locations, QA/QC.

No.

Source of information: URS 1993; City of Yankton, Yankton Water Department 1993

GW-3. Briefly describe the geologic setting.

The Yankton site is located on Quaternary Age terrace alluvial deposits from the Missouri River. The alluvial deposits are composed of silt, clay, and sand. The thickness of these deposits is approximately 20 feet. The alluvium rests upon approximately 100 feet of glacial outwash deposits. These outwash deposits are the result of deposition from braided streams and primarily consist of interbedded coarse sands and gravels (USGS 1986).

Underlying the glacial outwash and till are approximately 800 to 1,100 feet of Cretaceous Age sediments. These include the Carlile Shale, Niobrara Formation, Greenhorn Limestone, Graneros Shale, and Dakota Sandstone. Available information suggests that the Niobrara Formation, which consists of soft, calcareous shale, may be absent in the eastern portion of Yankton due to removal by glaciation and erosion (USGS 1986). The Dakota Sandstone unconformably overlies the Precambrian Age Sioux quartzite. No faults appear to be present within four miles of the site (USGS 1960).

GW-4. Describe geologic/hydrogeologic units on Table 2. Give names, descriptions, and characteristics of consolidated and unconsolidated zones beneath the site.

GW-5. Is the site in an area of karst terrain or a karst aquifer?

No.

GW-6. Net Precipitation (per HRS section 3.1.2.2).

5.04 inches

SURFACE WATER CHARACTERISTICS

SW-1. Mean annual precipitation (per HRS section 4.0.2)= 27.3. If less than 20", then count intermittent channels as surface water.

SW-2. Discuss the probable surface water flow pattern from the site to surface waters:

Surface water will potentially flow from the site into Marne Creek.

Source of information: USGS 1968

SW-3. If surface water exists within 2 miles of the site, describe surface water segments within the 15-mile distance limit.

Segment Name	River/ Lake/type	Fresh/Salt Water	Start (mi.)	End (mi.)	flow in cfs
Marne Creek	River	Fresh	0	1	unknown
Missouri River	River	Fresh	1	15	>10,000

Ground water to surface water distance unknown *

Angle θ unknown *

* Location of deposited waste is unknown.

SW-4. Provide a schematic diagram or simple figure which describes surface water segments, locates targets, identifies flow direction, PPE(s), etc. Refer to figure(s) submitted with text of report if appropriate.

Refer to Figure 2 in the PA text.

SW-5. Any positive or circumstantial evidence of a release to surface water? Evidence of a release by direct observation? Is the source located in surface water? Describe.

No.

Source of information: URS 1993

SW-6. Any positive or circumstantial evidence of a release to surface water target populations? Describe analytes, detection limits, background, hits, number of users, locations, QA/QC.

No.

Source of information: URS 1993; City of Yankton, Yankton Water Department 1993.

SW-8. Is the site or portions thereof located in surface water? No.

Is the site located in the 1 - <10 yr floodplain?

>10-100 yr? The site is located in the >10-100 year floodplain.

>100-500 yr?

>500 yr?

SW-9. Two-year 24-hour rainfall 2.5 inches

TARGETS

T-1. Discuss ground water usage within four miles of the site:

Scattered domestic, commercial, industrial and monitoring wells completed to various aquifers are located within a four-mile radius of the site.

Source of information: South Dakota Department of Environment and Natural Resources 1993

T-2. Summarize the drinking water population served via Ground Water within four miles of the site:

0 - 1/4 mi	<u>0</u>	*	* There may be a few scattered domestic wells in Yankton. None have been identified that are currently in use.
1/4 - 1/2 mi	<u>0</u>	*	
1/2 - 1 mi	<u>0</u>	*	
1 - 2 mi	<u>unknown</u>		
2 - 3 mi	<u>unknown</u>		
3 - 4 mi	<u>unknown</u>		

Attach calculations for population apportionment in blended systems.

T-3. Identify and locate any of the following surface water targets within 15 miles of the site: drinking water population(s) served by intakes, fisheries, sensitive environments described in Table 4-23 of the HRS, and wetlands as defined in the Federal Register.

Targets	Dist. from site (miles)	SW body	Flow in cfs	Population served/size (incl. units)	Contamination known/suspected
Wetlands	1	Marne Creek	unknown	0.5 miles	None
Fishery	1	Missouri River	>10,000	> 1 pound	None
Wetlands	1	Missouri River	>10,000	> 20 miles	None
Pallid Sturgeon Habitat	1	Missouri River	>10,000	Fed. endangered species	None

T-4. Summarize the population within a four-mile radius of the site:

	<u>total pop.</u>	<u>worker pop.</u>
on site	<u>2</u>	<u>0</u>
0 - 1/4 mi	<u>4,000</u>	
1/4 - 1/2 mi	<u>5,000</u>	
1/2 - 1 mi	<u>6,000</u>	
1 - 2 mi	<u>2,000</u>	
2 - 3 mi	<u>400</u>	
3 - 4 mi	<u>600</u>	

T-5. Identify and locate any terrestrial sensitive environments described in Table 5-5 of the HRS.

Terrestrial habitat known to be used by the Least Tern, a federally-listed endangered species, and the Piping Plover, a federally-listed threatened species.

T-6. Describe any positive or circumstantial evidence of a release to air target populations? Of a release by direct observation where target population exists within 1/4 mile of the site? Describe analytes, detection limits, background, hits, number of users, locations, QA/QC.

No evidence.

T-7. Identify and locate any potential or known resident soil exposure populations, if present. Describe conditions which lead the researcher to suspect contaminated soil within 200' of residences, if this condition exists.

Two residents on site; however, no soil contamination is suspected.

TABLE 1
WASTE CONTAINMENT AND HAZARDOUS SUBSTANCE IDENTIFICATION¹

SOURCE TYPE	SIZE (Volume/Area)	ESTIMATED WASTE QUANTITY	SPECIFIC COMPOUNDS	CONTAINMENT ²	SOURCES OF INFORMATION
Potential surficial deposits of coal gasification wastes.	Undetermined	Undetermined	Potential ammonia, cyanide and tar (benzene, naphthalene xylene, anthracene and others)	Unknown.	Pollution Engineering 1992 URS 1993

¹ Use additional sheets if necessary.

² Evaluate containment of each source from the perspective of each migration pathway (e.g., ground water pathway - non-existent, natural or synthetic liner, corroding underground storage tank; surface water - inadequate freeboard, corroding bulk tanks; air - unstabilized slag piles, leaking drums, etc.)

TABLE 2
HYDROGEOLOGIC INFORMATION¹

STRATA NAME/DESCRIPTION	THICKNESS (ft.)	HYDRAULIC CONDUCTIVITY (cm/sec)	TYPE OF DISCONTINUITY²	SOURCE OF INFORMATION
Lower James/Missouri glacial outwash deposits	100	$\approx 10^{-2}$	pinches out	USGS 1986
Niobrara Formation - Calcareous Shale	150 - 200	$\approx 10^{-4} \approx 10^{-6}$	pinches out	USGS 1960
Carlile Shale	$\approx 210 - 280$	$\approx 10^{-6}$	none identified	USGS 1960; CFR 1990
Greenhorn Limestone	unknown	$\approx 10^{-4}$	none identified	USGS 1960; CFR 1990
Graneros Shale	$\approx 125 - 160$	$\approx 10^{-8}$	none identified	USGS 1960; CFR 190
Dakota Formation - Sandstone, siltstone, shale	$\approx 280 - 450$	$\approx 10^{-4}$	none identified	USGS 1986

¹ Use additional sheets if necessary.

² Identify the type of aquifer discontinuity within four miles from the site (e.g., river, strata "pinches out", etc.).

APPENDIX C
CERCLA Eligibility Worksheet

CERCLA Eligibility Worksheet

Site Name Yankton Lighting and Heating Company #1

City Yankton State South Dakota

EPA ID Number SDD987674595

Note: The site is automatically CERCLA eligible if it is a Federally owned or operated RCRA site.

I. CERCLA Eligibility

Did the facility cease operations prior to November 19, 1980?

YES

If YES, then STOP. The facility is probably a CERCLA site.

If NO, continue to part II

II. RCRA Deferral Factors

Did the facility file a RCRA Part A application?

If YES:

1. Does the facility currently have interim status?
2. Did the facility withdraw its Part A application?
3. Is the facility a known or possible protective filer? (filed in error)
4. Does the facility have a RCRA operating or post closure permit?
5. Is the facility a late (after 11/19/80) or non-filer that has been identified by the EPA or the State? (facility did not know it needed to file under RCRA)

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Type of facility:

Generator_____ Transporter_____ Recycler _____
TSD (Treatment/Storage/Disposal) _____

If all answers to questions 1, 2, and 3 are NO, STOP. The facility is a CERCLA eligible site.

If answer to #2 or #3 is YES, STOP. The facility is a CERCLA eligible site.

If answer to #2 and #3 are NO and any other answer is YES, site is RCRA, continue to part III.

III. RCRA Sites Eligible for the NPL

Has the facility owner filed for bankruptcy under Federal or State laws? _____

Has the facility lost RCRA authorization to operate or shown probable unwillingness to carry out corrective action? _____

Is the facility a TSD that converted to a generator, transporter or recycler facility after November 19, 1980? _____

IV. Exempted substances:

Does the release involve hazardous substances other than petroleum? _____

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V. Other programs: The site may never reach the NPL or be a candidate for removal. We need to be able to refer it to any other programs in EPA or state agencies which may have jurisdiction, and thus be able to effect a cleanup. Responses should summarize available information pertaining to the question. Include information in existing files in these programs as part of the PA. Answer all that apply.

Is there an owner or operator?

NPDES-CWA: Is there a discharge water containing pollutants with surface water through a point source (pipe, ditch, channel, conduit, etc.)?

CWA (404): Have fill or dredged material been deposited in a wetland or on the banks of a stream? Is there evidence of heavy equipment operating in ponds, streams or wetlands?

UIC-SDWA: Are fluids being disposed of to the subsurface through a well, cesspool, septic system, pit, etc.?

TSCA: Is it suspected that there are PCB's on the site which came from a source with greater than 50 ppm PCB's such as oil from electrical transformers or capacitors?

FIFRA: Is there a suspected release of pesticides from a pesticide storage site? Are there pesticide containers on site?

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RCRA (D): Is there an owner or operator who is obligated to manage solid waste storage or disposal units under State solid waste or ground water protection regulations?

UST: Is it suspected that there is a leaking underground storage tank containing a product which is a hazardous substance or petroleum?

APPENDIX D
PA Site Reconnaissance Report

PA SITE RECONNAISSANCE REPORT
performed by URS Consultants, Inc.

SITE Yankton Lighting and Heating Company #1

ADDRESS 618 Douglas Street (southeast corner of 7th and Douglas streets)

DATE May 28, 1993

INVESTIGATORS Kristin Cottle (URS) and Tim Joseph (URS)

SITE CONTACT N/A

WEATHER, WIND Cloudy, drizzle

GENERAL SITE CONDITIONS (sources, operations, activities, etc.)

Residence apparently constructed in the early 1900s.

CRITICAL TARGET & PATHWAY INFORMATION

☐ Site Access Not restricted

☐ Stressed Vegetation None observed

☐ Odors None observed

☐ Overland Flow/Surface Water Runoff Potential overland flow to Marne Creek

☐ On-site Recreational Activities Potential - residence

☐ Endangered Species None observed

☐ Wells None observed

☐ Fishing Activity Probable in the Missouri River; unlikely on Marne Creek

☐ Water or Soil Staining None observed

☐ Nearest Residence (address) On site

DO ANY SITE CONDITIONS POSE A THREAT TO THE ENVIRONMENT OR NEARBY
POPULATION REQUIRING THAT THE SITE SAM BE NOTIFIED IMMEDIATELY AND
THAT AN IMMEDIATE POTENTIAL THREAT MEMORANDUM BE SENT TO THE EPA?

No X Yes (if yes, when?)

SIGNATURE OF INVESTIGATOR Timothy C. Joseph DATE 12/20/94

APPENDIX E
Site Photolog



PHOTO 1

Former location of the Yankton Lighting and Heating Company's first manufactured gas plant. View is to the southeast from Douglas Street.

PHOTO 2

View to the east of Marne Creek adjacent to the site.

